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March 18, 2022

Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

RE: Arizona Public Service Company (APS or Company)
2022 Demand Side Management (DSM) Implementation Plan
Docket No. E-01345A-21-0087

APS appreciates the opportunity to address questions Commissioner Kennedy posed on February 28, 2022, in the above matter regarding APS's application for approval of its 2022 DSM Implementation Plan. APS's portfolio of demand response (DR) programs for both residential and commercial customers is an important component of the Company's Clean Energy Commitment. These DR programs and technologies allow APS to partner with customers to reduce peak needs, create a more flexible demand, and integrate more clean energy into APS's system. APS is an industry leader in DR programs and has won many awards for its rapid deployment and growth of successful programs.

DR technologies are still relatively new in their adoption curve, and APS is still pursuing ways to expand these programs as the technology advances and new technologies become available. In addition to the APS Cool Rewards program, APS has DSM programs for connected batteries, hot water heaters, and electric vehicles (EVs) through managed charging programs. Some barriers to adoption and adding new technologies include internet bandwidth in customer homes (particularly in garages and near pools), device connectivity, and concerns about privacy and cybersecurity. The Company is looking to add connected pool pumps in the future and reintroduce its Behavioral DR Program this summer, which will send emails to customers asking them to voluntarily reduce their load on specific peak demand days.

In response to the posed questions, APS provides the following:

Question 1: What percentage of your peak load *today* is "controllable" across all existing demand response programs? What level of megawatt does this percentage equal?

In the 2021 DSM Annual Progress Report filed on March 1, 2022, APS reported 113 MWs of controllable load in the Cool Rewards residential smart thermostat DR

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program and 28 MWs in the Peak Solutions commercial DR program for a total of 141 MWs. This is based on the maximum one-hour DR capacity for each program and does not represent 141 MWs of resource equivalency for the entire peak period. The 141 MWs of controllable capacity represents approximately 2% of the 2021 summer peak of 7,580 MWs. In addition, while not providing directly controllable load, APS's time differentiated rate plans provide additional rate responsive DR capacity.

According to APS thermostat program partners, the APS program added more capacity in 2021 than any other individual utility company service territory of any size in North America. In the 2022 APS DSM Plan, APS is proposing to almost double the size of the program again, with a goal of up to 110,000 smart thermostats in the program by the end of 2022 (there were 56,616 thermostats in the program at the end of 2021). APS estimates approximately 20-25% of residential households in APS's service territory currently have connected smart thermostats installed, with the rest of the households yet to adopt the technology.

Question 2: Theoretically, what percentage of your peak load is *potentially* controllable in the event of heightened demand response efforts?

It is difficult to provide an exact percentage of potentially controllable peak load, but it is clear that this DR potential is growing with the evolution of connected devices, energy storage, and transportation electrification. APS has been aggressively pursuing this growing potential with successful customer focused programs that are being nationally recognized for their effectiveness.

There are a wide range of variables that must be considered to assess what percentage of peak load is potentially controllable, including:

1. The cost effectiveness of the potentially controllable load to be included in a utility DR program.
2. Customer interest and willingness to participate in the potential programs.
3. Technology development and customer adoption, which changes rapidly due to the evolution of new technologies like energy storage and the proliferation of connected devices that provide new opportunities for DR programs.

While these complex variables make it difficult to estimate the theoretical potential controllable load, it is clear that greater numbers of customers are adopting demand flexible technologies, and that the future potential continues to grow. APS is working closely with its strategic partners to aggressively scale successful programs like Cool Rewards and Peak Solutions while adding new pilots like Energy Storage and Managed EV Charging that are early in their adoption curve. APS is also simultaneously exploring third party aggregation of DR capacity through the all-DDSR Request for Proposal (RFP) that APS issued in 2021. The result of these efforts will be a growing customer-focused clean energy resource that will support APS's Clean Energy Commitments and the Commission's DSM policy objectives.

Question 3: If there is a difference between answers No. 1 and No. 2 above, please explain why.

See response to Question 2. Many flexible DR capacity opportunities are currently emerging and growing as customers adopt new energy technologies and connected devices. APS will continue to grow its programs as technologies advance by encouraging greater technology adoption through customer incentives (e.g., offering free smart thermostats to customers who agree to participate in one season in the Cool Rewards DR program). In addition, as additional market actors and lower price point products enter the marketplace for technologies like connected thermostats, we anticipate that technology adoption will grow.

Question 4: Could you describe any instances where your existing demand response program(s) allowed your utility to avoid firing up a fossil fuel peaker unit, or assisted your utility in maintaining grid stability?

Yes. One instance where DR programs provided critical reliability services occurred during the summer of 2021, when the Bootleg fire in Oregon rapidly impacted the ability to transmit energy out of the Pacific Northwest region. This resulted in a regional constraint of resources on July 9th that was not anticipated during the day-ahead timeframe. As solar resource production declined after sunset, the most critical hour for regional grid stability became the hour from 7 p.m. until 8 p.m. as demand remained high. Multiple neighboring balancing authorities initiated active Energy Emergency Alert level 3, indicating customer shutoffs could be imminent. At the same time, supplies from unspecified resources, including much of scheduled AG-X imports, were cut. On this day, APS was able to avoid such situations for our customers by calling both Cool Rewards and Peak Solutions DR events. These events provided 54 MWs of load reduction during the day's most important hour (7 p.m. to 8 p.m.), complimenting solar production and supporting grid stability.

The situation above demonstrates how DR is a valuable customer partnership and resource that provides benefits to customers and the grid. In order to continue to see the benefits of these programs, APS needs continued flexibility to run DR events during the grid's most critical hours, which are often 7 p.m. to 8 p.m. and fall outside of the new time-of-use window. APS sought clarification regarding the timing of events in its 2022 DSM Plan to allow the programs to continue to provide benefits customers have seen in previous years.

Question 5: Within your demand response programs, please describe limitations that restrict the quantity or extent to which your utility may adjust thermostats or other devices, such as APS's "20-event per year limit," or temperature range adjustment limits (example: restrict thermostat increases/decreases to 3 degrees) etc.

APS carefully works with partners and stakeholders to design successful DR programs that consider the right balance between the needs of individual program participants, the overall needs of the grid, and the capabilities offered by energy device partners. For instance, the example provided references a limit of 20 events per summer season for smart thermostat DR events. This limit has typically been established by thermostat partners who restrict utility access to call more than a set

number of events during a season out of concerns about potential customer dissatisfaction, which could cause customers to leave the program and lower potential savings. In addition, as part of the recently launched Residential Battery Pilot, APS works with participating battery partners to dispatch batteries to serve grid needs while also maintaining a reserve of energy in the battery at all times to be used in the event of an outage.

For the reasons described in response to Question 4, APS believes the most critical parameter that currently needs to be addressed is the timing when events are allowed to be called. In so doing, DR programs can be designed to reduce snapback in the hour after the on-peak time-of-use period ends and APS continues to experience peak demand conditions from 7 p.m. to 8 p.m. In addition, to be consistent with other thermostat programs nationwide and have increased ability to respond to grid emergencies, the Commission could lift the advanced notification requirements implemented in Decision No. 77763. Most thermostat manufacturers do not support two-hour advanced notifications as they have found customers prefer shorter notification times.

Question 6: Can enrolled customers in all your demand response programs override/refuse APS's request to reduce their demand?

All participants in the residential Cool Rewards program can override a DR event by simply adjusting their thermostat settings at any time during an event. Preserving a customer's ability to opt out increases customer satisfaction. All participants in the commercial Peak Solutions program have the option whether they choose to participate in each event. For the recently launched Residential Battery Pilot, APS is working with battery partners to provide options for customers to be able to override events. While it is APS's preference that customers retain override ability, currently not all battery partners support the ability for customers to opt out of DR events.

Question 7: Are free or discounted smart thermostats or other smart devices offered to customers for any of your demand response programs?

Yes, APS offers free or deeply discounted smart thermostats for customers who choose to purchase smart thermostats and pre-enroll them in the Cool Rewards DR program at the time of purchase. APS has been an industry leader in pioneering approaches for offering free pre-enrolled thermostats, and in 2021 APS provided almost 34,000 free smart thermostats for APS customers (customers who received free smart thermostats paid for shipping and taxes costs only). In addition, APS recently launched a new measure in the multifamily program that provides free connected water heating controls for participating multifamily communities. APS also recently launched incentives that provide discounts on residential batteries and connected Level 2 EV chargers.

Question 8: How did you calculate the annual Cool Rewards participation incentive amount (currently $25 and proposed to increase to $35) and what percentage of program savings are returned to participating customers in this payment versus retained by APS?

To determine the incentive amount, APS compared the estimated avoided cost savings value from the program against the total program delivery costs, including customer incentives and the payments required by thermostat manufacturer partners for access to call events on their devices. APS also used industry knowledge and discussions with other utilities and program partners about what incentive levels were needed to drive participation and customer retention in other states. After covering program costs, APS returns program savings to customers in the form of incentives for participants and any potential fuel savings to customers through the PSA. APS provided notice to the Commission in December[1] that it increased the incentive from $25 to $35 in February 2022 for the upcoming summer season in recognition of three-hour DR setback events. In addition, the increased incentive will help better retain customers to enable greater scaling of the program.

Question 9: APS recently launched a "connected water heating" program. Could this effort be integrated withing Cool Rewards or Peak Solutions to boost participation and positive impact? Similarly, could electric charging, pool pumps, or any other possible opportunities for "connected devices" be included?

Yes, although these are separate programs from a regulatory approval standpoint, they are delivered to customers in an integrated fashion.

Please let me know if you have any questions.

Sincerely,

/s/ Elizabeth Lawrence

Elizabeth Lawrence

[1] *See* Docket No. E-01345A-20-0151. https://docket.images.azcc.gov/E000016867.pdf